

CLAIMS

We claim:

1. A slide mechanism for mounting a tie-down assembly on a trailer,
comprising:

5 an elongated member having an axial length, including:

a slot extending the axial length of the elongated member, the slot
having a gap width; and

a channel disposed parallel to and in communication with the slot,
the channel having a width that exceeds the gap width of the slot; and

10 a carriage bolt having a head and an elongated neck, the head having a
width exceeding the gap width of the slot;

wherein:

the channel is configured to receive and maintain the carriage bolt head
adjacent to the slot; and

15 the carriage bolt neck is configured to couple the tie-down assembly to the
slide mechanism.

2. The slide mechanism of claim 1, wherein the carriage bolt includes a
guide disposed between the head and the elongated neck and configured to extend
through the slot, and wherein the neck includes a threaded external portion configured to
20 receive an internally threaded tightening nut coupling the tie-down assembly to the slide
mechanism.

3. The slide mechanism of claim 1, wherein the guide is generally square
shaped and has a width that extends across the gap width of the slot.

4. The slide mechanism of claim 1, wherein the channel includes a round-
25 shaped portion configured to receive a round-shaped head portion of the carriage bolt.

5. The slide mechanism of claim 1, wherein the elongated member includes a
box-shaped beam defining a hollow interior.

6. The slide mechanism of claim 5, wherein the box shaped beam includes a top wall and a bottom wall, and a pair of side walls, and the elongated member further includes an elongated rail portion extending vertically from and generally aligned with one of the side walls of the beam.

5 7. The slide mechanism of claim 6, wherein the top wall of the elongated member includes the slot and the channel disposed therein.

8. The slide mechanism of claim 6, wherein the side wall of the elongated member is aligned with the rail member and includes the slot and the channel disposed along the side wall aligned with the rail portion.

10 9. The slide mechanism of claim 1, wherein the elongated member defines an opening configured to receive the carriage bolt head into the channel.

10. The slide mechanism of claim 1, wherein the elongated member includes a generally U-shaped plate having a first leg and a second leg and a top portion therebetween, and wherein a free end of each of the first leg and the second leg has a pair
15 of winged end portions configured to couple with the trailer.

11. The slide mechanism of claim 10, wherein the slot and the channel are disposed along the top portion of the U-shaped plate.

12. The slide mechanism of claim 1, wherein the elongated member includes a vertical support disposed underneath the channel.

20 13. The slide mechanism of claim 1, wherein the elongated member includes a generally L-shaped plate having a vertical portion perpendicular to a base portion.

14. The slide mechanism of claim 13, further including an upper and a lower lip perpendicular with respect to the vertical portion.

25 15. The slide mechanism of claim 13, wherein the slot and the channel are disposed along the vertical portion of the L-shaped plate.

16. The slide mechanism of claim 1, wherein the elongated member includes a horizontal plate having a pair of side portions.

17. The slide mechanism of claim 16, wherein the horizontal plate includes a pair of L-shaped legs coupled underneath the side portions.

18. The slide mechanism of claim 1, wherein the elongated member includes a male adapter having a pair of downward extending lips.

5 19. The slide mechanism of claim 18, wherein the elongated member includes a female adapter having a generally U-shaped channel having a first leg coupled to the elongated member and a second leg, wherein the first and the second legs of the U-shaped channel are configured to receive one of the pair of downward extending lips of the male adapter, and wherein the pair of lips of the male adapter define a gap configured
10 to receive the second leg of the U-shaped female adapter.

20. The slide mechanism of claim 1, wherein the elongated member includes a T-shaped vertical support disposed underneath the channel.

21. The slide mechanism of claim 1, wherein the elongated member includes a beam having a top wall and a bottom wall and a pair of side walls, wherein the slot is
15 disposed along one of the side walls, and wherein the beam includes a first interior passage disposed between the channel and the top wall and a second interior passage disposed between the channel and the bottom wall.

22. The slide mechanism of claim 21, wherein the top and the bottom walls extend beyond the side wall to receive the tie-down assembly.

20

23. A trailer frame for transporting a load, the trailer frame supported on an axle and a pair of wheels, comprising:

a tie-down assembly configured to secure a load; and

5 a slide mechanism configured to slidably couple the tie-down assembly to the trailer frame, the slide mechanism including:

an elongated member having an axial length, including

a slot extending the axial length of the elongated member, the slot having a gap width; and

10 a channel disposed in communication with the slot, the channel having a width that exceeds the gap width of the slot; and

a carriage bolt with a head having a width that exceeds the gap width of the slot;

wherein:

15 the channel is configured to maintain the carriage bolt head adjacent to the slot; and

the carriage bolt is configured to receive the tie-down assembly.

24. The trailer frame of claim 23, wherein the tie-down assembly includes:

a ring; and

20 a mounting plate configured to couple the ring to the slide mechanism.

25. The trailer frame of claim 24, wherein the ring includes a linear portion, wherein the mounting plate includes a raised portion configured to receive the linear portion of the ring, and wherein the mounting plate includes an opening to receive the carriage bolt.

26. The trailer frame of claim 23, wherein the tie-down assembly includes a post coupled to an L-shaped mounting plate with an opening configured to receive the carriage bolt.

27. The trailer frame of claim 23, wherein the tie-down assembly includes:

5 a side frame;

a pair of support arms, each arm having a first end coupled to the side frame and a second end;

a mounting plate having at least one opening configured to receive the carriage bolt of the slide mechanism;

10 a tube having a cylindrical surface integrated with the mounting plate; and

a pivot pin configured to couple the second end of the support arm to the tube and the mounting plate.

28. The trailer frame of claim 23, wherein the trailer frame includes a first side and a second side, and wherein the slide mechanism extends perpendicular with respect
15 to the first and the second sides.

29. The trailer frame of claim 23, wherein the tie-down assembly includes:

a plate member having an angled portion coupled to a base portion, the base portion having at least one opening to receive a carriage bolt coupling the tied down assembly to the slide mechanism, and wherein the angled portion includes an opening
20 and a rounded free end.

30. The trailer frame of claim 23, wherein the elongated member of the slide mechanism includes an L-shaped plate with a vertical portion having the slot and the channel.

31. The trailer frame of claim 23, wherein the slide mechanism is mounted
25 along the side of the trailer frame, and wherein the tie-down assembly includes a spare tire assembly having a mounting plate with at least one opening configured to receive the carriage bolt and slidably couple the tie-down assembly to the slide mechanism.

32. The trailer frame of claim 23, wherein the tie-down mechanism includes:
a loop; and
a base portion coupled to the loop, wherein the base portion is integrated with the head of the carriage bolt.

5 33. The trailer frame of claim 23, wherein the tie-down assembly includes a bumper having an opening to receive the carriage bolt of the slide mechanism.

34. The trailer frame of claim 23, wherein trailer frame include a first side and a second side, and wherein the slide mechanism is disposed horizontally and in parallel with the first and the second sides of the trailer frame.

10 35. The trailer frame of claim 23, wherein the elongated member of the slide mechanism is a bunk pad, and wherein the tie-down assembly includes a bunk coupled by the carriage bolt to the slide mechanism.